

## **REMARKS/ARGUMENTS**

The Applicant has carefully considered this Application in connection with the Examiner's Action and respectfully requests reconsideration of the Application in view of the foregoing amendments and the following remarks.

The Applicant originally submitted Claims 1-7 in the application. The Applicant has amended Claims 1-7. Accordingly, Claims 1-7 are currently pending in the application.

### **I. Rejection of Claims 1 and 7 under 35 U.S.C. §102**

The Examiner has rejected Claims 1 and 7 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,943,636 to Baldwin, *et al.* Specifically, the Examiner asserts that Baldwin anticipates the element in Claim 1 of a “continuously variable optical delay line.” The Applicant respectfully disagrees. Baldwin teaches a plurality of four-port optical switches serially connected through optical fibers of different fixed length, and by optical fibers of equal fixed length. Baldwin, FIG. 2. The passage cited by the Examiner, Baldwin, col. 3, lines 35-44, accurately describes the operation of the optical delay network shown in FIG. 2, but the Examiner incorrectly characterizes the passage and FIG. 2 as teaching a continuously variable delay. The delay produced by Baldwin's optical delay network is simply the sum of the delay at each stage of the network, as light is routed through the lower path of the switch or through the longer upper path. Baldwin notes that “[a] large number of time delays are formed by setting different optical switches in the straight through or crossover condition.” *Id.* at col.4, line 27. But a “large number” of delays is not continuously variable, as claimed in the present Application. The Examiner states that the lower path of

Baldwin's optical delay network adds a "specific 'continuous' delay," apparently thus construing a continuous optical path as a "continuously variable delay." This assertion is technically flawed. A specific delay is a fixed delay, which is not continuously variable. Thus, Baldwin is only capable of a number of fixed delays, as determined by the specific choice of optical path lengths connecting the ports of the optical switches in the delay network. Therefore, Baldwin fails to teach a "continuously variable optical delay line" as cited in Claim 1 of the present Application, and fails to anticipate the Claim.

The Examiner rejects Claim 7 for the reasons cited in rejecting Claim 1, in addition to asserting that "[o]ptical fibers are *inherently* all pass filters, as they do not attenuate any frequency component of an optical signal...." (Emphasis in original.) The Examiner is incorrect. In addition to passing all frequencies without attenuation, an all pass filter applies a time delay spectrum to an optical signal, such that specific frequencies separated by a free spectral range are delayed, while frequencies between delay peaks are not. See, e.g., Kazarinov, U.S. Patent No. 6,289,151, col. 3, lines 8-25; id., col. 6, lines 32-35; and id., FIG. 5. An optical fiber does not induce a time delay spectrum on an optical signal, so is not an all pass filter. Therefore, Baldwin fails to anticipate the element of "all pass filter" as claimed in Claim 7, and fails to anticipate the Claim.

Because Baldwin fails to anticipate each and every element of Claims 1 and 7, these claims are allowable. The Applicant respectfully requests that the Examiner withdraw the rejection of these claims.

## **II. Rejection of Claims 2 through 6 under 35 U.S.C. §103(a)**

The Examiner has rejected dependent Claims 2 through 6 as being unpatentable over Baldwin. As set forth above, Baldwin fails to teach a continuously variable optical delay line as

claimed in independent Claim 1, so Baldwin also fails to anticipate each and every element of dependent Claims 2-6, and the claims are allowable.

Moreover, Claims 2-6 are not obvious over Baldwin. The Examiner argues that because any desired delay value can be designed into Baldwin's optical delay network, it would have been obvious to one of ordinary skill to select optical path lengths to produce any desired delay value. But by employing a continuously variable optical delay line in combination with a discretely variable delay line, the presently claimed invention provides an arbitrary delay value without the need to design for a specific delay value. Claim 2, for example, claims a variable optical delay line wherein a continuously variable element of the delay line provides the ability to select an arbitrary delay value between discreet values provided by the incremental element. An appropriate analogy would be the fine tune knob on a television employing an electromechanical tuning mechanism. However, Baldwin does not teach or suggest such a continuously variable delay in a manner that does not require modification of the design as suggested by the Examiner. Thus, Baldwin fails to render the presently claimed invention obvious, and the Claims 2-6 are allowable.

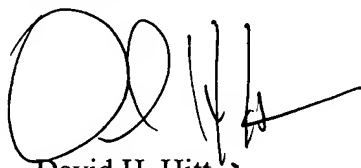
#### IV. Conclusion

In view of the foregoing amendments and remarks, the Applicants now view all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-7.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application.

Respectfully submitted,

**HITT GAINES, P.C.**

A handwritten signature in black ink, appearing to read 'David H. Hitt', with a stylized flourish extending to the right.

David H. Hitt

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